

DOING SCIENCE: THE PROCESS OF SCIENTIFIC INQUIRY

California Science Content Standards Earth Science - Grade 6

Lesson	Standard	Description
All lessons	7.a	Develop a hypothesis.
3, 4	7.b	Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
3	7.c	Construct appropriate graphs from data and develop qualitative statements about the relationships between variables.
1, 3, 4	7.d	Communicate the steps and results from an investigation in written reports and oral presentations.

California Science Content Standards Life Science – Grade 7

Lesson	Standard	Description
3	5.b	Know organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.
3, 4	7.a	Select and use appropriate tools and technology (including calculators, computers, balances, spring scales, microscopes, and binoculars) to perform tests, collect data, and display data.
3, 4	7.b	Use a variety of print and electronic resources (including the World Wide Web) to collect information and evidence as part of a research project.
All lessons	7.c	Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
1, 3, 4	7.e	Communicate the steps and results from an investigation in written reports and oral presentations.

California Science Content Standards Physical Science - Grade 8

Lesson	Standard	Description
All lessons	9.a	Plan and conduct a scientific investigation to test a hypothesis.
3, 4	9.b	Evaluate the accuracy and reproducibility of data.
3, 4	9.c	Distinguish between variable and controlled parameters in a test.

3	9.d	Recognize the slope of the linear graph as the constant in the relationship $y=kx$ and apply this principle in interpreting graphs constructed from data.
3	9.g	Distinguish between linear and nonlinear relationships on a graph of data.
California English-Language Arts Content Standards – Grades 6, 7, 8		
Reading		
Lesson	Standard	Description
2, 3, 4	2.3	Connect and clarify main ideas by identifying their relationships to other sources and related topics. (6)
2, 3, 4	1.3	Clarify word meanings through the use of definition, example, restatement, or contrast. (7)
2, 3, 4	1.3	Use word meanings within the appropriate context and show ability to verify those meanings by definition, restatement, example, comparison, or contrast. (8)
Writing		
Lesson	Standard	Description
All lessons	1.1	Choose the form of writing (e.g., personal letter, letter to the editor, review, poem, report, narrative) that best suits the intended purpose. (6)
2, 3, 4	2.2.a	Explain the situation. (6)
All lessons	2.2.c	Offer persuasive evidence to validate arguments and conclusions as needed. (6)
All lessons	2.3.a	Pose relevant questions with a scope narrow enough to be thoroughly covered. (6)
1, 3, 4	2.3.b	Support the main idea or ideas with facts, details, examples, and explanations from multiple authoritative sources (e.g., speakers, periodicals, online information searches). (6)
1, 3, 4	1.2	Support all statements and claims with anecdotes, descriptions, facts and statistics, and specific examples. (7)
All lessons	1.4	Identify topics; ask and evaluate questions; and develop ideas leading to inquiry, investigation, and research. (7)
All lessons	2.3.a	Pose relevant and tightly drawn questions about the topic. (7)
All lessons	2.3.b	Convey clear and accurate perspectives on the subject. (7)
1, 3, 4	2.5.a	Include the main ideas and most significant details. (7)
1, 3, 4	2.5.c	Reflect underlying meaning, not just the superficial details. (7)

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3, 4	1.1	Create compositions that establish a controlling impression, have a coherent thesis, and end with a clear and well-supported conclusion. (8)
3, 4	1.3	Support theses or conclusions with analogies, paraphrases, quotations, opinions from authorities, comparisons, and similar devices. (8)
1, 3, 4	2.3.b	Record important ideas, concepts, and direct quotations from significant information sources and paraphrase and summarize all perspectives on the topic, as appropriate. (8)
1, 3	2.3.d	Organize and display information on charts, maps, and graphs. (8)
1, 3, 4	2.4.a	Write persuasive compositions, including a well-defined thesis (i.e., one that makes a clear and knowledgeable judgment). (8)
All lessons	2.4.b	Present detailed evidence, examples, and reasoning to support arguments, differentiating between facts and opinion. (8)
Listening and Speaking		
Lesson	Standard	Description
1, 3	1.5	Emphasize salient points to assist the listener in following the main ideas and concepts. (6)
3, 4	1.6	Support opinions with detailed evidence and with visual or media displays that use appropriate technology. (6)
All lessons	2.2.a	Pose relevant questions sufficiently limited in scope to be completely and thoroughly answered. (6)
3, 4	2.2.b	Develop the topic with facts, details, examples, and explanations from multiple authoritative sources (e.g., speakers, periodicals, online information). (6)
2, 3, 4	2.5.a	Theorize on the causes and effects of each problem and establish connections between the defined problem and at least one solution. (6)
2, 3, 4	2.5.b	Offer persuasive evidence to validate the definition of the problem and the proposed solutions. (6)
All lessons	1.1	Ask probing questions to elicit information, including evidence to support the speaker's claims and conclusions. (7)
1, 3, 4	1.5	Arrange supporting details, reasons, descriptions, and examples effectively and persuasively in relation to the audience. (7)
All lessons	2.3.a	Pose relevant and concise questions about the topic. (7)
All lessons	2.3.b	Convey clear and accurate perspectives on the subject. (7)
3, 4	2.3.b	Record important ideas, concepts, and direct quotations from significant information sources and paraphrase and summarize all relevant perspectives on the topic, as appropriate. (8)
1, 3	2.3.d	Organize and record information on charts, maps, and graphs. (8)

California Mathematics Content Standards - Grades 6 & 7		
Number Sense		
Lesson	Standard	Description
3, 4	2.1	Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation. (6)
3, 4	1.2	Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers. (7)
Algebra and Functions		
3, 4	2.0	Analyze and use tables, graphs, and rules to solve problems involving rates and proportions. (6)
3	1.5	Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph. (7)
Statistics, Data Analysis, and Probability		
3, 4	2.1	Compare different samples of a population with the data from the entire population and identify a situation in which it makes sense to use a sample. (6)
3, 4	2.5	Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims. (6)
3	1.0	Collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program. (7)
Mathematical Reasoning		
4	2.2	Apply strategies and results from simpler problems to more complex problems. (6, 7)
3, 4	2.4	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning. (6)
3, 4	2.5	Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work. (6)
4	2.7	Make precise calculations and check the validity of the results from the context of the problem. (6)
3, 4	3.1	Evaluate the reasonableness of the solution in the context of the original situation. (6, 7)
3, 4	1.1	Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns. (7)
3, 4	2.5	Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning. (7)

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3, 4	2.6	Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work. (7)
4	2.8	Make precise calculations and check the validity of the results from the context of the problem. (7)